Alaska-Dixon Entrance to Cape Spencer

(1) **Alaska**, the largest of the United States, occupies the northwestern part of the North American continent. The State is bordered on the E and S by Canada and on the W and N by the Pacific and Arctic Oceans. The northernmost point of Alaska is Point Barrow (71°23'N., 156°28'W.); the westernmost point is Cape Wrangell (52°55'N., 172°26'E.) on Attu Island; and the southernmost point is Nitrof Point (51°13.0'N., 179°07.7'W.), on Amatignak Island. Cape Muzon (54°40'N., 132°41'W.) is on the historic parallel which is the coastal boundary between Alaska and Canada's British Columbia. Cape Muzon is on the N side of Dixon Entrance and is 480 miles NW of Cape Flattery, Washington; between the two United States capes is the coastal area of British Columbia.

(2) Alaska was purchased from Russia in 1867 and became an organized territory of the United States in 1912. By Presidential proclamation of January 3, 1959, Alaska officially became the 49th of the United States. The population of the State was 300,382 in 1970. Principal resources are oil, timber, fish, and coal. Alaska has a general ocean coastline of 5,770 nautical miles and a tidal shoreline of 29,462 miles. The State is so huge that its description requires two complete volumes of the National Ocean Service's nine-volume series of United States Coast Pilots.

(3) Coast Pilot 8 deals with the panhandle section of Alaska between the S boundary and Cape Spencer: general ocean coastline is only 250 nautical miles but tidal shoreline total 11,085 miles.

(4) Subject area, most of which is part of the **Tongass National Forest**, consists of a 30-mile-wide strip of mainland bordered by an 80-mile-wide compact chain of islands. About 50,000 people live here, but when compared to the population of the other 49 states, southeastern Alaska and the Tongass National Forest are underpopulated areas. This population is found in 16 organized communities that have been withdrawn from national forest land.

(5) Most of the islands are mountainous, rough, broken, and are covered with dense growths of spruce, hemlock, and cedar except on the higher summits. The mountains on the mainland are higher, less wooded, and usually snowcapped.

(6) In midsummer the snowline is at altitudes of 2,000 to 3,000 feet (610 to 915 m) on the mainland mountains. Glaciers form in the narrow gorges of the coastal ranges and sometimes attain sufficient size to reach the water. On the islands the land usually does not reach sufficient altitude to retain snow throughout the year.

(7) Seabottom features are similar to those of the adjacent land. The steep inclines and narrow gorges of the land continue below sea level and form a system of narrow deepwater straits that extends from Puget Sound to Cape Spencer. The rugged ridges and peaks of the land area, and the absence of plains or extensive plateaus, are matched by the numerous rocks and reefs, surrounded by deep water, and the general absence of extensive shoals except at the mouths of glacier-fed streams or rivers.

(8) **Disposal Sites** and **Dumping Grounds**.–These areas are rarely mentioned in the Coast Pilot, but are shown on the nautical charts. (See Disposal Sites and Dumping Grounds, chapter 1, and charts for limits.)

Aids to navigation

(9) Lights, daybeacons, and buoys mark the coast and inside passages of southeastern Alaska. The principal light stations are equipped with fog signals. (See the Light List for a complete description of navigational aids.)

Electronic navigation

(10) Radar, loran, omega, and the radio direction finder have given the navigator means of determining his position in any weather. The mariner should, however, appreciate the limitations and sources of error of the various systems. Radar should be properly calibrated and tuned. Radio direction finders must be calibrated and the operator should become experienced in the use of the equipment. Radar, radio direction finder, omega, and loran equipment are subject to malfunctions which may not be immediately apparent to the operator, and there are conditions when loran or radio

signals may be subject to error when the shipboard receiver is operating properly. Soundings should always be taken in critical places, and the position should be checked by visual bearings when possible.

(11) Navigation by **radar** is facilitated along the coast of Alaska and in the inland passage by the generally high relief of the coastline. The rugged coast provides many points, headlands, small islands and islets, and large offshore rocks which give accurate radar ranges and bearings. In general mountain peaks give the best ranges along the waterways of and the approaches to southeastern Alaska; tangents of islands, points, and headlands are usually unreliable. Radar ranges are more accurate than radar bearings. When two or more suitable targets can be positively identified, a better fix is obtained by radar ranges alone than by radar ranges and bearings. When visibility permits, visual bearings should always be taken. When positioning by a bearing and a radar range of a single object, the identification of the target must be positive. Floating aids should be used with caution as targets, and only when no adequate fixed objects are available.

(12) Radio direction finder equipment is subject to several kinds of errors. Bearings obtained at twilight or at night, or bearings which are almost parallel to the coast should be accepted with reservations, due to "night effect" and to the distortion of the radio waves if traveling over land. Other sources of error in the system may be avoided by the proper calibration of the shipboard receiver.

(13) Loran coverage is good in the W approach to southeastern Alaska. However, loran coverage for coastwise navigation is somewhat unreliable because of the overland propagation of the signals.

COLREGS Demarcation Lines

(14) The International Regulations for Preventing Collisions at Sea, 1972 (72 COLREGS) apply on all the sounds, bays, harbors, and inlets of Alaska. (See **Part 80**, chapter 2.)

Ports and Waterways Safety

(15) (See **160**, chapter 2, for regulations governing vessel operations and requirements for notification of arrivals, departures, hazardous conditions, and certain dangerous cargoes to the Captain of the Port.)

Anchorages

(16) The seabottom features in southeastern Alaska are similar to the adjacent land; steep inclines and narrow rocky gorges that are not suitable for anchorages. However, many places in the inside passages are suitable for temporary anchorage during the summer months. In fall and winter the navigator must be much more cautious in selecting shelter and good holding ground.

(17) A **special anchorage** for recreational and other small craft has been established in Favorite Channel between Point Stephens and Point Louisa. (See **Part 110**, chapter 2, for limits and regulations.)

Dangers

(18) Southeastern Alaska has many unmarked rocky ledges around its islands and in the approaches to inlets, straits, and sounds. Kelp grows on most rocky bottoms and will be seen on the surface of the water during the summer and autumn months, and should always be considered a sign of danger. Dead, detached kelp floats on the water in masses, while live kelp attached to rocks streams away level with the surface. A heavy surge will occasionally tear kelp away from rocks, and a moderate current will ride it under water where it will not be seen. **Live kelp is almost always an indication of depths less than 10 fathoms (18.3 m)**.

(19) **Floating logs, deadheads, or sinkers** are present throughout the year in all the inland waters, channels, passes, and inlets in southeastern Alaska and are dangerous to navigation both day and night. Floating logs are especially prevalent at the entrance to inlets after high tides and storms.

Pipelaying barges

(20) With the increased number of pipeline laying operations, operators of all types of vessels should be aware of the dangers of passing close aboard, close ahead, or close astern of a jetbarge or pipelaying barge. Pipelaying barges and jetbarges usually move at 0.5 knot or less and have anchors which extend out about 3,500 to 5,000 feet (1067 to 1524 m) in all directions and which may be marked by lighted anchor buoys. The exposed pipeline behind the pipelaying barge and the area in the vicinity of anchors are hazardous to navigation and should be avoided. The pipeline and anchor cables also represent a submerged hazard to navigation. It is suggested, if safe navigation permits, for all types of vessels to pass well ahead of the pipelaying barge or well astern of the jetbarge. The pipelaying barge, jetbarge, and attending vessels may be contacted on VHF-FM channel 16 for passage instructions.

(21) A **restricted area** is in Lutak Inlet, off Lynn Canal. (See **334.1310**, chapter 2, for limits and regulations.)

Echoes

(22) In foggy weather, the distance offshore frequently can be estimated by noting the elapsed time between a sounding of a ship's whistle or siren and the resultant echo from the sides of hills or mountains. The distance in nautical miles from hill or mountain is about

one-tenth the number of seconds between sound and echo. In narrow channels with steep shores a vessel can be kept in midchannel by navigating so that echoes from both shores return at the same instant.

Tides

(23) Throughout southeastern Alaska there are considerable inequalities in the heights of the two high waters and the two low waters of each day; these differences average about 2 feet (0.6 m) between successive high waters and 3 feet (0.9 m) between successive low waters. Because of such differences, the mean of the lower low waters (rather than the mean of all low waters) has been adopted as the plane of reference for NOS nautical charts of the area.

(24) The average daily (diurnal) range of tide is 10 to 17 feet (3.0 to 5.2 m) in this part of Alaska; the greater ranges occur in the inside passages. (See the Tide Tables for more detailed information.)

Currents

(25) The prevailing current that sets NW along the coasts of British Columbia and southeastern Alaska may reach velocities (estimated) of 1.5 knots; it is greatest with strong S winds but may be completely canceled by strong NW winds. The offshore extent of this current is not known but it is believed to be strongest between the 100-fathom curve and the coast; that it extends to the inside passages of southeastern Alaska is indicated by the results of current observations at several inside locations between Dixon Entrance and Cape Spencer.

Tidal currents

(26) Velocities of 4 to 6 knots are not uncommon in some of the inside passages of southeastern Alaska. (See the Tidal Current Tables for more detailed information.)

Tsunamis (Seismic sea waves)

(27) Several large earthquakes have occurred in or near southeastern Alaska during the past 75 years. However, any tsunamis generated have been damaging only near the epicentral area. The 10-meter tsunami observed in 1899 from the Yakutat Bay earthquake was restricted to the area near the bay. Likewise, in 1958, although Lituya Bay experienced high waves, only waves of less than half a meter were reported at other points in southeastern Alaska. In 1949, a magnitude 8.1 earthquake near Queen Charlotte Islands generated a tsunami of .3 meter at Ketchikan.

(28) The tsunami generated by the Prince William Sound earthquake of March 28, 1964, caused great destruction in southern Alaska but little damage in southeastern Alaska. The Alaskan Regional Tsunami Warning System was established following this earthquake and became operational in September 1967. Its primary function is to detect and locate major earthquakes in the Aleutian-Alaskan region and in the event that tsunami generation is possible or probable, provide timely and effective tsunami information and warnings to those residents of Alaska and the Aleutian Islands likely to be affected. The center of the Warning System is at Palmer Observatory where telemetered data from a number of Alaskan seismograph stations and tide stations are received and analyzed. Subsidiary warning centers are in operation at Sitka and Adak Observatories. These observatories have a limited warning responsibility in nearby areas. Warnings are also broadcast by the National Weather Service on NOAA Weather Radio.

Local magnetic disturbance

(29) Local magnetic disturbance is prevalent in southeastern Alaska, as shown by magnetic observations at a great many places. The magnetic variations shown on a chart are intended to represent average conditions. In regions where there is marked local disturbance, great care should be exercised, as there may be places where the variation differs several degrees from the average. Even if the local disturbance has been investigated in considerable detail by shore observations, the navigator should not rely entirely on his compass in such areas. Such investigations can give only values at specified points but do not give the extent over which each observed value applies.

(30) Significant local disturbance has been observed at East Island, Duke Island, Nakat Inlet, Grindall Island, Tolstoi Point, Ernest Sound, Shakan Strait, Keku Strait, Port Snettisham, Taku Harbor, Gastineau Channel, Lynn Canal, Peril Strait, Granite Cove, and in North Passage (Icy Strait). It has been investigated in considerable detail by shore observations in the vicinity of Gastineau Channel, Port Snettisham, and Chilkoot Inlet. In the vicinity of Chilkoot Inlet, the variation observed at several points ranges from about 20° W of normal to 15° E of the normal variation.

Weather

(31) This section is a general description of the climate and related features of southeastern Alaska. Details of navigational weather hazards may be found in the appropriate local chapters. Climatological tables are in the appendix.

(32) Marine Weather Services Charts published by the National Weather Service show radio stations that transmit marine weather broadcasts and additional information of interest to mariners. These charts are for

sale by the National Ocean Service, Distribution Division (N/ACC3). (See appendix for address.)

(33) The following is a seasonal overview of climatic features that are of concern to mariners, along with a description of some weather-related problems. While weather along both outside routes and inside passages is described, details of local navigational weather hazards may be found in the appropriate chapters. Climatological tables for the important ports follow the appendix. Temperatures are in degrees Fahrenheit.

(34) Piloting this coast in winter is made perilous by the many, often intense, extratropical low pressure systems that find their way to the Gulf of Alaska. These storms, originating over central and W Pacific waters, converge in the Gulf which acts as a catch basin since it is rimmed by high coastal mountain ranges. They are accompanied by fronts, strong and shifting winds, frequent precipitation, and extensive cloudiness. While occurring year round, they are usually most numerous and intense from late fall through midwinter. They often arrive on a NE heading at speeds of 15 to 25 knots, but many slow or stall as they become trapped in the Gulf. Early winter storms are often younger and in a more vigorous stage of development than those later in the season. Some stall and beat themselves out against the mountains while others intensify and control the weather from Dixon Entrance to Cape Spencer for several days. Often the storms come in families of four or five that can dominate the weather pattern for 2 weeks or more.

(35) As a low approaches, winds back to the SE quadrant and strengthen. Following the passage of the low's center, winds generally shift to the NW, although they may blow out of the SW for a time. Waves generated by these nearby storms are known as sea and usually follow the wind direction. Swell, generated by distant storms, is mainly out of the W and NW. In the statistics when both are reported, the higher of the two is used. Swell will be mentioned specifically when it is operationally significant.

(36) Along the sea routes N of Dixon Entrance, gales (windspeeds of 34 knots or more) can be expected about 10 percent of the time, most often from SE or S. Windspeeds average 20 to 22 knots while wave heights of 12 feet (3.7 m) or more are encountered about 25 percent of the time. In severe conditions, 40-foot seas have been reported. Head or beam waves 12 feet (3.7 m) or higher or following seas of 20 feet (6.1 m) or more may cause violent ship motions. These motions can be alleviated by a reduction in ships' speed. In these waters, speed reductions in winter are required about 5 to 10 percent of the time on most headings.

(37) Along the inside routes, because of the rugged terrain, winds and waves may vary widely in direction and intensity. The sheltering effect helps keep average windspeeds around 12 knots; gales are rare. Some narrow channels may cause a local increase in windspeed. Descriptions of these effects may be found in the local chapters. Most of the inside routes are somewhat exposed to southerlies and southeasterlies and these winds often average 13 to 15 knots. Seas are often calmer on the inside and observations indicate that wave heights of 5 feet (1.5 m) or less are encountered up to 50 percent of the time compared to 15 percent at sea. Swell penetrates these straits only when its direction is in line with the entrance, and then it is rapidly dampened by refraction, reflection, and shoaling in the relatively shallow waters. Swell usually has a long period and can be dangerous in the nearshore areas where shoaling may cause an increase in wave height.

(38) Occasionally, downslope winds from the mountainous interior create problems along the inside routes. Known as "williwaws" these are violent, short-lived squalls with strong, gusty winds that result when cold air builds up in the mountains and then drains down the slopes attaining great force in narrow inlets. They can come up suddenly and successive strong gusts of winds from varying directions may cause vessels at anchor to yaw badly and possibly drag anchor. Sometimes williwaws are accompanied by blinding snowstorms. Even when piloting an outside route close to the coast, williwaws may be encountered near the mouths of inlets.

(39) The seemingly endless procession of winter storms is responsible for the dreary, gray skies and frequent rain and snow. Precipitation can be steady or showery. Showers vary in intensity and are concentrated along cold or occluded fronts, in spiral bands E and NE of the storm's center, and in cumulus clouds within the cold air SW of the center. Steady precipitation usually covers an extensive area NE and N of the center. When storms approach, southeasterlies usually mean rain while E and NE winds often bring snow. Precipitation occurs about 33 percent of the time in winter; about 20 to 30 percent of this falls as snow. Overcast conditions are present about 50 percent of the time. The low pressure systems alternate with migratory high pressure systems which bring brief spells of clear weather. Occasionally, a cold high pressure system will move in from the N or E and become entrenched, enabling bright, clear skies to prevail for several days. These limited cold air outbreaks usually modify rapidly over the relatively warm waters. The prevailing W and SW atmospheric steering currents and the high coastal mountain barriers prevent these continental outbreaks from being a regular feature.

(40) Precipitation can restrict visibility to below 2 miles (3.2 km) but, except in a heavy rain or snowstorm, it

does not fall below ½ mile (0.8 km). Sometimes precipitation will cool the air causing clouds to lower and fog to form. In general, visibilities of 5 miles or more are encountered 80 to 85 percent of the time. Fog often forms when the air is much warmer than the water, not a common occurrence in winter. Warmest temperatures, both air and sea, run about 50° (10°C) in winter. On occasion, air temperatures drop into the midteens (-10°C) while water temperatures range down to the mid 30's (2°C) in open water.

(41) The average monthly sea level pressure charts for spring resemble a battle for control of the Pacific basin between the advancing summer high and the retreating Aleutian Low. The Low makes a stand in the Gulf of Alaska, through which migratory low pressure systems continue to roam with some regularity. While an average of three to five lows per month pass close to the SE Alaskan coast, they are usually less intense than their winter counterparts. This is subtly reflected in the rise in atmospheric pressure, but more dramatically observed at sea in fewer gales and calmer seas. Maximum observed wave heights are now in the 20- to 25-foot (6.1 to 7.6 m) range. High seas cause a reduction in ships' speed only about 1 percent of the time or less on most headings. Changes that become noticeable in March accelerate during April and May. In open waters, gales are encountered about 5 percent of the time in March; during April and May they occur less than 5 percent everywhere. Average windspeeds drop below 10 knots in most inner passages by May and even over open waters fall to 13 knots, compared to 18 knots in March. Although winds remain variable, they are most likely to blow out of the SE and S. The parade of lows is responsible for frequent precipitation (20 to 30 percent of the time). Snow becomes less likely as spring progresses and by May it is no longer a threat. Fog becomes more of a problem by May (reported 10 percent of the time). Still, throughout the spring, visibilities of 5 miles (8.0 km) or more can be expected 85 to 90 percent of the time, while visibilities of less than 2 miles (3.2 km) occur about 5 percent of the time.

(42) Increased daylight means rising air temperatures. By May, subfreezing readings are unlikely in these waters. Mean air temperatures gradually catch up to the more slowly climbing sea surface temperatures during spring. By May, both average in the mid 40's (7°C) with a range from the mid 30's (2°C) to the mid 50's (13°C) (sea water) and mid 60's (18°C) (air).

(43) The summer weather charts are usually dominated by the large, semi-permanent North Pacific high centered over the central E North Pacific Ocean. The waters of SE Alaska lie on the N edge of that circulation. Just S of the area, winds blow mainly out of the W due to the clockwise circulation. Winds mainly from the SE through NW blow over this region because of the intrusion of migratory low pressure systems. These storm systems are least frequent, smallest, least intense, and farthest N in summer but still exert considerable influence on the weather. The counterclockwise flow forces warm tropical air over heavier polar maritime air resulting in stratified high and middle clouds with occasional light rain or drizzle . About two or three low centers pass through the area each month. Occasionally, a system will generate strong winds and rough seas, however, gales and waves of 12 feet (3.7 m) or more are encountered less than 5 percent of the time. Along the inside passages, windspeeds of 10 knots or less and seas of 5 feet (1.5 m) or less are the rule. Even on the outside routes, maximum seas of just 12 to 15 feet (3.7 to 4.6 m) have been reported. Ships' speed is reduced by high seas less than 1 percent of the time on all headings.

(44) When high pressure extends over the region, winds, particularly in the inside passages, are determined or influenced by local conditions. Along the passages, nights may be calm with breezes picking up around daybreak, increasing during the day, and moderating around sunset. Directions and speed are often determined by topography.

(45) The S and SE winds associated with the low pressure systems produce frequently cloudy skies while rain occurs 20 to 25 percent of the time. Occasionally these winds, along with westerlies, are responsible for fog which causes visibilities to fall below two miles (3.2 km), about 15 percent of the time, and below ½ mile (0.8 km), up to 3 percent of the time. Advection fog, which forms when warm air blows across cooler water, occurs along some of the inside passages where water from melting glaciers helps keep sea surface temperatures in the 48° to 57°F (9° to 14°C) range. In these straits, visibilities fall below 5 miles (8.0 km)up to 30 percent of the time. Along the outside routes, the warm Alaska Current helps keep water temperatures in the low 50's to mid 60's (10° to 20°C). Air temperatures are usually warmest during August when they range from about 50° to 68°F (10° to 20°C).

(46) Autumn is a season of change. The North Pacific subtropical high begins to shrink as the Aleutian Low gradually reasserts itself as the dominant climatic feature. The relatively light breezes of summer are replaced by stronger winds generated by a rapidly increasing number of intense extratropical storms. The seas become rougher, precipitation more frequent, temperatures colder, and nights longer.

(47) An average of about three to five low pressure centers each month move through the area, while many more pass close enough to influence the weather. These systems come mainly from the W and SW as two

major storm tracks terminate in the Gulf of Alaska. Storms often move into this region at speeds of 15 to 25 knots, although many decelerate and stall. In the open waters, gales are encountered about 10 percent of the time by November; twice that of September. Seas of 12 feet (3.7 m) or more are encountered 10 percent of the time in September and 30 percent by October. Maximum wave heights of 25 to 35 feet (7.6 to 10.7 m) have been observed. On most headings, a reduction in ships' speed, due to high seas, is required about 1 to 5 percent of the time; W headings are most vulnerable. Along the inside passages, conditions are usually quieter, although winds and waves from the S through W can create rough conditions at entrances from the sea. Topography can create locally hazardous wind and wave conditions.

(48) Precipitation occurs 25 to 30 percent of the time. In September, this falls as rain, except for a slight chance of snow in the northernmost inland passages where the land has a marked influence on temperatures. By November, about 10 to 20 percent of the precipitation falls as snow. Snow falls most frequently in the northeasternmost inland passages. Precipitation and fog, which is observed 5 to 10 percent of the time, restrict visibilities to below 2 miles (3.2 km) about 10 percent of the time. Cloudy conditions blanket the region nearly 50 percent of the time. This extensive cloud cover, along with slowly cooling waters, helps keep the air temperatures in a confined range. In September, both air and sea temperatures range from the mid 40's to mid 60's (7° to 18°C). By November, minimum air temperatures drop to around 25°F (-3.9°C) compared to the low 40's (6°C) for sea water; both reach maximums in the mid 50's (13°C).

Superstructure Icing

(49) Ice accretion is a complex process that depends on sea conditions, atmospheric conditions, and the ship's size and behavior. Icing can be caused by heavy sea spray, freezing rain, or fog. On large merchant vessels which pass quickly through icing conditions and which experience less wave wash in rough seas because of their high freeboard, it can mean no more than slippery decks. At other times, even large vessels may experience problems. Smaller ships with relatively lower freeboard, such as fishing vessels, small merchant ships, and Coast Guard cutters, are susceptible to wave wash in rough seas. Icing can greatly increase a vessel's weight and elevate the center of gravity, making it top heavy. When ice accretion increases the sail area of the vessel, wind action may result in an increased heeling moment. Nonuniform ice distribution can change a vessel's trim. Icing also hampers steerability and lowers speed. Similar potentially dangerous stresses can occur on oil-drilling and other stationary platforms.

(50) Freezing spray is the most common and dangerous form of icing. It can occur when the air temperature falls below the freezing temperature of sea water (usually about 28.6°F (-1.9°C)) and when sea surface temperatures are below about 41°F (5° C). The lower the temperature and the stronger the wind, the more rapidly ice accumulates. Freezing spray may deposit thick layers of ice on rigging or on deck areas, rapidly increasing the vessel's weight, which can cause it to sink.

(51) The routes through this region, both inside and out, are susceptible to superstructure icing in winter. Wind and temperature conditions are right for some degree of icing about 5 to 10 percent of the time in midwinter. Along the more exposed outside routes, very heavy to severe icing (accumulations of 1.0 inches to 1.5 inches (2.5 to 3.8 cm) in 3 hours) have been reported.

(52) The National Weather Service's regional offices at Anchorage and Fairbanks routinely issue structural icing forecasts as part of their marine forecasting program.

Immersion hypothermia

(53) Immersion hypothermia is the loss of heat when a body is immersed in water. With few exceptions, humans die if their normal rectal temperature of approximately 99.7°F (37.6°C) drops below 78.6°F (25.8°C). Cardiac arrest is the most common direct cause of death. The main threat to life during prolonged immersion is cold or cold and drowning combined.

(54) Cold lowers body temperature, which in turn slows the heart beat, lowers the rate of metabolism, and increases the amount of carbon dioxide in the blood. Resulting impaired mental capacity is a major factor in death by hypothermia. Numerous reports from shipwrecks and accidents in cold water indicate that people can become confused and even delirious, further decreasing their chances of survival.

(55) The length of time that a human survives in water depends on the water surface temperature and, to a lesser extent, on the person's behavior. Body type can cause deviations. For example, thin people become hypothermic more rapidly than fat people. Extremely fat people may survive almost indefinitely in water near 32°F (0°C) if they are warmly clothed.

(56) The cooling rate can be slowed by the person's behavior and insulated gear. A study was made of more than 500 immersions in the waters around Victoria B.C. with temperatures ranging from 39° to 61°F (3.9° to 16.1°C). It was learned that if the critical heat loss areas could be protected, survival time would increase.

The Heat Escape Lessening Posture (HELP) was developed for those in the water alone and the Huddle for small groups. Both require a life preserver. HELP involves holding the upper arms firmly against the side of the chest, keeping the thighs together, and raising the knees to protect the groin area. In the Huddle, people face each other and keep their bodies as close together as possible. These positions improve survival time in 48°F (8.9°C) water to four hours, approximately two times that of a swimmer and one and one-half times that of a person in the passive position.

Wind Chill

(57) Human and animal bodies, or any physical bodies warmer than their surroundings, lose heat. The rate of loss depends on the barriers to heat loss, such as clothing and insulation, the speed of air movement, and the air temperature. Heat loss in humans increases dramatically in moving air that is colder than skin temperature taken as 91°F (32.8°C). Even a light wind increases heat loss, while a strong wind can actually lower body temperature if the rate of loss is greater than the body's heat replacement rate.

(58) Loss of body heat can also occur by breathing cold air into the lungs and touching or leaning against cold objects. Heat loss is not as great in bright sunlight where there is some radiant heat gain. Convective cooling is the major source of body heat loss in shady areas and on cloudy days or nights.

Ice

(59) Sea ice affects only a small part of this area and then only during severe winters. Glacial ice, while more prevalent, is usually limited to certain inner passages.

(60) Glacial ice usually appears in the form of icebergs, growlers, and ice flows, and is hazardous to navigation, particularly during periods of darkness and low visibility. Much of this glacial ice is covered with mud and stones and resembles reefs or rocks awash. Glacial ice is usually limited to Frederick Sound, Stephens Passage, Cross Sound, and Icy Strait. These areas can be clogged with ice while W of Cape Spencer glacial ice is rare. Occasionally, a berg will emerge from Cross Sound and be spotted 10 to 25 miles seaward from Cape Spencer.

(61) Sea ice forms when air temperatures cool sea water below its freezing point (about 28.6°F (-1.9°C)). Because water of low salinity and in shallow areas freezes quickest, first ice generally appears near river mouths and close to shore. As the season progresses, the belt of shore ice can spread and form an extension of the land. However, because of the large tidal range there is generally very little fast ice. Most of the sea ice that forms in severe winters is in the form of drift ice, which moves under the influence of winds, tides, and currents, and is constantly breaking up and consolidating. During severe winters, sea ice may form in sheltered bays and inlets N of 56°N during January; it usually melts by April.

(62) Ice conditions are neither monitored nor forecast for Southeast Alaska waters. The presence of glacier ice in shipping lanes is known to the U.S. Coast Guard only through sighting reports from mariners. Reports of glacier ice will not normally be announced in the Coast Guard Broadcast Notice to Mariners unless the reported bergs or ice concentrations present an especially hazardous situation.

(63) Monthly estimates of wind chill, hypothermia, iceberg, and superstructure icing hazards are published in the Pilot Charts.

Optical Phenomena

(64) The two basic types of optical phenomena are those associated with electromagnetic displays and those associated with the refraction or diffraction of light. The aurora and Saint Elmo's fire are electromagnetic displays. Halos, coronas, parhelia, sun pillars, and related effects are optical phenomena associated with the refraction and diffraction of light through suspended cloud particles; mirages, looming, and twilight phenomena such as the "green flash" are optical phenomena associated with the refraction of light through air of varying density. Occasionally, sunlight is refracted simultaneously by cloud suspensions and by dense layers of air producing complex symmetric patterns of light around the sun.

(65) A **mirage** is caused by refraction of light rays in a layer of air having rapidly increasing or decreasing density near the surface. A marked decrease in the density of the air with increasing altitude is the cause of phenomena known as looming, towering, and superior mirages. **Looming** is said to occur when objects appear to rise above their true elevation. Objects below the horizon may actually be brought into view. **Towering** has the effect of elongating visible objects in the vertical direction. A **superior mirage** is so named because of the appearance of an image above the actual object. Ships have been seen with an inverted image above and an upright image floating above that.

(66) Such mirages, especially looming and towering, are fairly common in the area, with frequency increasing toward the higher latitudes. They are most common in summer when the necessary temperature conditions are most likely. Another type, the **inferior mirage**, occurs principally over heated land surfaces such as deserts, but may be observed occasionally in shallow coastal waters, where objects are sometimes

distorted beyond recognition. In contrast to the superior mirage, the condition necessary for the inferior mirage is an increasing air density with height. Atmospheric zones of varying densities and thicknesses may combine the effects of the various types of mirages to form a complicated mirage system known as **Fata Morgana**.

(67) The **green flash** is caused by refractive separation of the sun's rays into its spectral components. This may occur at sunrise or sunset when only a small rim of the sun is visible. When refractive conditions are suitable, red, orange, and yellow waves of sunlight are not refracted sufficiently to reach the eye, whereas green waves are. The visual result is a green flash in the surrounding sky.

(68) The refraction of light by ice crystals may result in many varieties of **halos and arcs**. Because red light is refracted the least, the inner ring of the halo is always red with the other colors of the spectrum following outward. Halos with radii of 22° and 46° have been observed with the refraction angle within the ice spicules determining which type may occur.

(69) **Solar and lunar coronas** consist of a series of rainbow-colored rings around the sun or moon. Such coronas resemble halos but differ in having a reverse sequence of the spectrum colors, red being the color of the outer ring, and in having smaller and variable radii. This reversed sequence of the spectrum occurs because coronas result from diffraction of light whereas the halo is a refraction phenomenon. The radius varies inversely as the size of the water droplets. Another type of diffraction phenomenon is the **Brocken bow** (also known as **glory)**, which consists of colored rings around shadows projected against fog or cloud droplets.

(70) Ice blink, land blink, and water and land skies are reflection phenomena observed on the underside of cloud surfaces. **Ice blink** is a white or yellowish-white glare on the clouds above accumulations of ice. **Land blink** is a yellowish glare observed on the underside of clouds over snow-covered land. Over open water and bared land, the underside of the cloud cover when observed to be relatively dark is known as **water sky** and **land sky**. The pattern formed by these reflections on the lower side of the cloud surfaces is known as "**sky map**."

(71) **Auroral displays** are prevalent throughout the year, but are observed most frequently in the winter. Records show that the periods of maximum auroral activity coincide in general with the periods of maximum sunspot activity.

(72) The cloudlike, luminous glow is the most common of the auroral forms. The arc generally has a faint, nebulous, whitish appearance and is the most persistent of the auroras. Ray auroras are more spectacular but less persistent phenomena. They are usually characterized by colored streaks of light that vary in color and intensity, depending on altitude. Green is the most commonly observed hue, although red and violet may occur in the same display. In the Northern Hemisphere this phenomenon is known as the aurora borealis (northern lights).

(73) **Saint Elmo's fire** is observed more rarely than the aurora and may occur anywhere in the troposphere. It occurs when static electricity collects in sufficiently large charges around the tips of pointed objects to ionize the air in its vicinity and leak off in faintly luminescent discharges. Saint Elmo's fire is observed occasionally on ship masts and on airplane wings in the vicinity of severe storms. It is described either as a weird, greenish glow or as thousands of tiny, electrical sparks flickering along the sharp edges of discharging surfaces.

Routes

(74) The Inside Route from Seattle, Washington, to southeastern Alaska is by way of passages through British Columbia. (See British Columbia Sailing Directions, Volumes I and II, published by the Canadian Hydrographic Service, and Pub. No. 154, Sailing Directions (Enroute) British Columbia, published by National Geospatial-Intelligence Agency Hydrographic/Topographic Center.)

(75) The best route through British Columbia for deep-draft vessels bound from Seattle to Alaska is by usual courses out of Puget Sound, thence across Strait of Juan de Fuca NE of Hein Bank, 56 miles from Seattle, into the main channel of Haro Strait, thence into Strait of Georgia through Boundary Pass.

(76) The route through Strait of Georgia passes 1 mile N of Ballenas Islands, 150 miles from Seattle. Continuing NW, the vessel enters Discovery Passage and encounters Seymour Narrows, 216 miles from Seattle, where the current velocity is over 15 knots. (See Tidal Current Tables for daily predictions at Seymour Narrows.)

(77) From Discovery Passage the route is through Johnstone Strait, Race Passage, Broughton Strait, Queen Charlotte Strait, Goletas Channel, Christie Passage, and Gordon Channel into Queen Charlotte Sound 1.5 miles W of Egg Island Light, 347 miles from Seattle. From Queen Charlotte Sound the route continues N through Fitz Hugh Sound, Milbanke Sound, Grenville Channel, and Chatham Sound to the Canada-Alaska boundary which crosses the inner part of Dixon Entrance 610 miles from Seattle.

(78) The **Inside Route northward of Dixon Entrance is through Alaska waters**. Revillagigedo Channel and part of Tongass Narrows lead to Ketchikan, 659 miles from Seattle. The route through Tongass Narrows joins

Clarence Strait at Guard Island and continues NW to Stikine Strait, which leads N to Wrangell, 749 miles from Seattle, or to Wrangell Narrows, 756 miles from Seattle.

(79) Vessels that wish to avoid Wrangell Narrows can go through Snow Passage, at the head of Clarence Strait, and continue through Sumner Strait and Decision Passage to sea or up Chatham Strait, Frederick Sound, Stephens Passage, and Gastineau Channel to Juneau. Vessels bound for Skagway continue up Chatham Strait and Lynn Canal.

(80) The route through Wrangell Narrows enters Frederick Sound near Petersburg, 771 miles from Seattle, and continues N through Stephens Passage and Gastineau Channel to Juneau, 879 miles from Seattle. Vessels using Wrangell Narrows proceed from Stephens Passage through Favorite Channel and Lynn Canal to Skagway, 962 miles from Seattle.

(81) Vessels bound for Sitka, 883 miles from Seattle, sometimes proceed to sea at Dixon Entrance or Cape Decision and make an outside approach through Sitka Sound. Those desiring shelter use the Inside Route through Wrangell Narrows and enter Peril Strait from Chatham Strait; thence their courses are through Sergius Narrows, Salisbury Sound, Neva Strait, and Olga Strait to Sitka.

(82) The Inside Route is often used by vessels bound for Yakutat and other ports to the NW. From Juneau the route is S in the Gastineau Channel, thence through the N part of Stephens Passage, thence through Saginaw Channel and part of Lynn Canal to the N end of Chatham Strait, and thence through Icy Strait and Cross Sound to the sea. The principal ports in southeastern Alaska may also be reached from seaward through the many deep entrance channels.

Offshore Vessel Traffic Management Recommendations

(83) Based on the **West Coast Offshore Vessel Traffic Risk Management Project**, which was co-sponsored by the **Pacific States/British Columbia Oil Spill Task Force** and **U.S. Coast Guard Pacific Area**, it is recommended that, where no other traffic management areas exist such as Traffic Separation Schemes, Vessel Traffic Services, or recommended routes, vessels 300 gross tons or larger transiting along the coast anywhere between Cook Inlet and San Diego should voluntarily stay a minimum distance of 25 nautical miles offshore. It is also recommended that tank ships laden with persistent petroleum products and transiting along the coast between Cook Inlet and San Diego should voluntarily stay a minimum distance of 50 nautical miles offshore. Vessels transiting short distances between adjacent ports should seek routing guidance as needed from the local Captain of the Port or VTS authority for that area. This recommendation is intended to reduce the potential for vessel groundings and resulting oil spills in the event of a vessel casualty.

Principal ports

(84) The principal ports in southeastern Alaska are Ketchikan, including Ward Cove, Sitka, including Silver Bay, and Wrangell, Skagway, and Juneau, the State capital.

(85) Regular calls are made by deep-draft vessels at Metlakatla, Ketchikan, Ward Cove, Wrangell, Juneau, Lutak Inlet, Skagway and Sitka (Silver Bay); and by container-laden barges from Puget Sound ports at Metlakatla, Saxman, Ketchikan, Wrangell, Petersburg, Juneau, Port Chilkoot, and Sitka.

(86) The principal marine traffic in this part of Alaska, however, consists of fishing vessels operating from canneries and cold storage plants, and log rafts being towed from lumber camps to sawmills and pulpmills.

Pilotage, Alaska

(87) Pilotage except for certain exempted vessels, is compulsory for all vessels navigating the inside waters of the State of the State of Alaska. Exempted from state requirements are

(88) (1) vessels subject to federal pilot requirements under 46 U.S.C. 8502,

(89) (2) fishing vessels, including fish processing and fish tender vessels, registered in the United States or in British Columbia, Canada,

(90) (3) vessels propelled by machinery and not more than 65 feet in length over deck, except tugboats and towboats propelled by steam,

(91) (4) vessels of United States registry of less than 300 gross tons and towboats of United States registry and vessels owned by the State of Alaska, engaged exclusively

(92) (A) on the rivers of Alaska, or

(93) (B) in the coastwise trade on the W or N coasts of the United States including Alaska and Hawaii, and including British Columbia, Yukon Territory, and Northwest Territories, Canada,

(94) (5) vessels of Canada, built in Canada and manned by Canadian citizens, engaged in frequent trade between

(95) (A) British Columbia and Southeastern Alaska S of 58°10'N., if reciprocal exemptions are granted by Canada to vessels owned by the State of Alaska and those of United States registry, or

(96) (B) northern Alaska N of 68°07'N. and Yukon Territory or Northwest Territories,

(97) (6) pleasure craft of United States registry, and

(98) (7) pleasure craft of foreign registry of less than 300 gross tons as measured under **46 CFR 69.51 through 69.75**.

(99) The State of Alaska has established the following boundaries of the inside waters of Southeast Alaska:

(100) A line drawn from Cape Spencer Light due S to a point of intersection which is due W from the southernmost point of Cape Cross, thence to Cape Edgecumbe Light, thence through Cape Bartolome Light and extended to a point of intersection which is due W of Cape Muzon Light, thence to a point which is 1 mile, 180° true, from Cape Chacon Light, thence to Barren Island Light, thence to Lord Rock Light, thence to the southernmost extremity of Garnet Point, Kanagunut Island, thence to the southeasternmost extremity of Island Point, Sitklan Island, and thence a line drawn from the northeasternmost extremity of Point Mansfield, Sitklan Island, 040° true, to where it intersects the mainland.

(101) At all buoyed entrances from seaward to bays, sounds, rivers, or other estuaries for which specified boundary lines are not described, the waters inshore of a line drawn approximately parallel with the general trend of the shore, drawn through the outermost buoy or other aid to navigation of any system of aids, are inside waters.

(102) Vessels are excluded from the use of a state licensed marine pilot in compulsory pilotage waters when proceeding directly between points outside Alaska and an established pilot station for the express purpose of embarking or disembarking a pilot in the following situations:

(103) (1) travel via Revillagigedo Channel to Twin Islands Pilot Station; in transiting Revillagigedo Channel, ships must stay west of longitude 131°05';

(104) (2) travel via Clarence Strait to Guard Island Pilot Station;

(105) (3) travel via Clarence Strait to Point McCartey Pilot Station;

(106) (4) travel via Cape Muzon in Cordova Bay;

(107) (A) to Shoe Island Pilot Station for vessels proceeding to Long Island;

(108) (B) to Mellen Rock Pilot Station for vessels proceeding to Hydaburg;

(109) (5) travel via Cape Bartolome in Bucareli Bay to Cabras Island Pilot Station;

(110) (6) travel via Cape Ommaney in Chatham Strait

(111) (A) to Point Retreat Pilot Station for vessels proceeding to Lynn Canal or Saginaw Channel;

(112) (B) to Spasski Island Pilot Station for vessels proceeding to Icy Strait or Cross Sound;

(113) (C) to Hawk Inlet Pilot Station for vessels proceeding to Hawk Inlet; and

(114) (D) Frederick Sound to Point Cornwallis Pilot Station for vessels proceeding to Frederick Sound and Stephens Passage;

(115) (7) travel via Sitka Sound to Sitka Sound Pilot Station;

(116) (8) travel via Prince William Sound to the Cordova Pilot Station;

(117) (9) travel via Prince William Sound to the Valdez Pilot Station;

(118) (10) travel via Prince William Sound to the Whittier Pilot Station;

(119) (11) travel via Resurrection Bay to Seward Pilot Station;

(120) (12) travel via Cook Inlet to the Homer Pilot Station;

(121) (13) travel to the Kodiak City or Womens Bay Pilot Station without transiting Whale Passage; and

(122) (14) travel by the most direct safe route to a pilot station or pickup point arranged under 12 AAC 56.120(b).

(123) The Southeastern Alaska Pilots Association provides pilot services for Yakutat and ports S to the Canadian border.

(124) Their addresses is:

(125) Southeastern Alaska Pilots Association, 1621 Tongass Ave., Suite 300, Ketchikan, AK 99901; telephone, 907-225-9696 (24 hours), FAX 907-247-9696; E-Mail-seapilots@prodigy.com; cable address, SEAPILOTS; radio call, WKD-53. The pilot office monitors VHF-FM channel 12.

(126) Pilot services should be arranged in advance through ships' agents, or otherwise, in sufficient time to enable the pilot to travel to the area where the service is required.

(127) The established pilot boarding stations or pickup points for Southeast Alaska are as follows:

(128) (1) Guard Island - about 1 mile (1.6 km) NW of Guard Islands Light (55°26.8'N., 131°52.9'W.);

(129) (2) Point McCartey - about 1 mile (1.6 km) E of Point McCartey Light (55°06.8'N., 131°42.4'W.);

(130) (3) Cabras Island - about 1 mile (1.6 km) NW of Cabras Island, Bucareli Bay (55°22.0'N., 133°24.8'W.);

(131) (4) Sitka Sound - about 0.25 mile (0.4 km) N of The Eckholms Light (57°00.6'N., 135°21.5'W.);

(132) (5) Point Retreat - about 1 mile (1.6 km) NW of Point Retreat Light (58°24.7'N., 134°57.3'W.);

(133) (6) Twin Islands - about 2 miles (3.2 km) NE of Twin Island Light TI (55°08.6'N., 131°13.0'W.), seasonal station utilized only from May 1 through September 30.

(134) The destination of vessels from the above pickup points, while not limited to them, is primarily for the following ports: Ketchikan, Petersburg, and Wrangell from Guard Islands; Ketchikan, Metlakatla, and Juneau from Point McCartey; Klawock from Cabras Islands;

Sitka, and/or en route the Point Retreat pilot pickup point, from The Eckholms; Haines, Skagway, and Juneau from Point Retreat; and Misty Fjords from Twin Islands.

(135) In Southeast Alaska, the vessels used as pilot boats serve other functions. However, when engaged in pilotage duties they display the appropriate day and night signals. The pilot boat assumes radiotelephone watch about 1 hour prior to a vessel's ETA at the pickup point. Contact is made on VHF-FM channel 16 or 13 with channel 12 and 77 as working frequencies.

(136) Boarding instructions such as vessel's speed, course, ladder height, and preferred boarding side will be given by the pilot prior to boarding. This information depends on weather condition and type of ship Pilotage services are affected by weather, tides and currents, and daylight hours.

Towage

(137) Tugs are located at most ports in southeastern Alaska and are available for assisting vessels in mooring and unmooring at the various wharves and piers. However, these tugs are principally engaged in towing and handling log rafts and barges. Arrangements should be made well in advance through shipping agents. For further information, refer to the description of the port.

Vessel Arrival Inspection

(138) Vessels subject to U.S. quarantine, customs, immigration, and agricultural quarantine inspections generally make arrangements in advance through ships' agents. Government officials conducting such inspections are stationed in most major ports. Mariners arriving at ports where officials are not stationed, should contact the nearest activity providing that service. (See appendix for addresses.) Unless otherwise directed, officials usually board vessels at their berths.

(139) **Harbormasters** are mentioned in the text when applicable. They generally have charge of berthing vessels.

Supplies

(140) Deep-draft vessels usually obtain supplies before visiting Alaska ports. Gasoline, diesel oil, diesel fuel, distillates, lubricating oils, and greases are available in all ports and at many of the operating canneries in southeastern Alaska. Fuel oils for steamships are not available in southeastern Alaska. Provisions, fishing supplies, and some marine supplies are available at most ports in the area. Ice for fishing vessels is available from cold storage companies and from operating canneries. Fresh water is piped to most wharves, piers, and floats.

Repairs

(141) There are no major repair facilities for large vessels in southeastern Alaska. The nearest major repair facilities are in the Puget Sound area and British Columbia. Marine railways, grids, and marine repair firms for smaller vessels are located in the larger cities of southeastern Alaska. The smaller communities and operating canneries usually have machine shops capable of making minor repairs to small vessels. Small craft are sometimes beached on mudflats for minor repairs. Electronic repair firms and commercial divers are in the larger ports.

(142) Spare parts for machinery and electronic equipment are stocked in Ketchikan, Wrangell, Juneau, and Sitka. Parts not stocked can usually be obtained from suppliers in Washington, Oregon, and California by overnight air freight shipment.

Communications

(143) There is regularly scheduled steamer and barge service between Puget Sound ports, Prince Rupert, B.C., and the ports of southeastern Alaska. The State of Alaska operates a vehicle and passenger ferry weekly from Seattle and daily from Prince Rupert, B.C. to Ketchikan, Wrangell, Petersburg, Sitka, Juneau, Haines, and Skagway; this service is less frequent during the winter from Prince Rupert, B.C. Passenger cruise ships sail daily from Vancouver, B.C., to southeastern Alaska during the summer.

(144) Scheduled airline flights are maintained daily from the other states to several points in southeastern Alaska, where connecting service is available by scheduled or chartered flights to all points in Alaska.

(145) Radio transmission and reception is good in the main channels of the inland waters of southeastern Alaska; however, it becomes very poor when in inlets and passes shielded by mountains from the transmitting or receiving stations.

(146) Telephone service is available from most communities in southeastern Alaska.

(147) Alascom, Inc., operates a radio network that includes coast stations with ship-to-shore service throughout most of Alaska. Complete information on this service can be obtained from Alascom, Inc., Office of Public Affairs, Pouch 6607, Anchorage, Alaska 99502.

Reporting Marine Emergencies and Oil Spills

(148) Marine emergencies, oil spills, possible illegal entry, sightings of foreign naval or fishing vessels, icebergs, submarines, or any other unusual events should be reported to the nearest Coast Guard unit by radio or by calling, toll free, Zenith 5555 anywhere in Alaska except Juneau, Douglas, or Kodiak. Within these cities,

call 586-2680 for Juneau/Douglas, and 487-5888 for Kodiak.

Small-craft facilities

(149) Small-craft floats for local and transient craft are maintained by most communities in southeastern Alaska. For further information, refer to the description of the community in the text. Complete information on the location of these facilities may also be obtained from the State of Alaska, Division of Waters and Harbors, Juneau, Alaska 99801.

(150) **A vessel of less than 65.6 feet (20 meters) in length or a sailing vessel shall not impede the passage of a vessel that can safely navigate only within a narrow channel or fairway. (Navigation Rules, International-Inland Rule 9(b).**

Commercial fishing facilities

(151) Canneries and cold storage companies in southeastern Alaska operate during the fishing season as prescribed by the Alaska State Department of Fish and Game. These canneries, cold storage companies, and their facilities are active during some years and inactive in others; some are abandoned by their owners and the buildings and facilities fall into ruins in a short time.

(152) Active canneries, during the non-fishing season, and inactive canneries and cold storage companies usually have a caretaker in attendance. Fresh water, and some fuels and provisions are usually available at these facilities in an emergency.

(153) Radiotelephone communication with the nearest Alascom, Inc. coastal station is maintained by most active facilities and those in caretaker status.

Logging industry

(154) Logging camps are located along the mainland and islands throughout southeastern Alaska. They are established when the forest products are sold by the U.S. Forest Service to private companies. A camp normally operates from 3 to 10 years and has less than 100 people in the smaller camps, but the larger ones may have several thousand residents. The camps generally operate 9 or 10 months each year, closing to caretaker status only during the heavy snow periods.

(155) Float facilities for tugs and small craft used in handling and making up log rafts, and for seaplanes and barges used to transport personnel and supplies are maintained by logging camps located along the waterways. These camps, in addition to maintaining radiotelephone communication with Alascom, Inc., can usually provide fresh water, fuels, and provisions in an emergency.

(156) Location of the various camps can be obtained from the U.S. Forest Service in Ketchikan or Juneau or from the Alaska Loggers Association and the marine operations department of the Ketchikan Pulp Company in Ketchikan. This information can also be obtained from the logging engineering department of the Alaska Lumber and Pulp Company in Sitka.

Standard Time

(157) All of Alaska E of 169°30'W. uses A**laska standard time (Ak.s.t.)**, which is 9 hours slow of Greenwich mean time. Example: when it is 1200 at Greenwich, it is 0300 in Juneau and Anchorage. All the Aleutian Islands W of 169°30'W., including the communities of Adak, Atka, Attu, and Shemya, use **Hawaii-Aleutian standard time (H.A.s.t.)**, which is 10 hours slow of Greenwich mean time. Example: when it is 1200 at Greenwich, it is 0200 at Adak.

Daylight saving time

(158) In the State of Alaska, clocks are advanced one hour on the first Sunday in April and set back to standard time on the last Sunday in October.

Legal public holidays

(159) The following are legal holidays in the area covered by this Coast Pilot: New Year's Day, January 1; Martin Luther King, Jr.'s Birthday, third Monday in January; Washington's Birthday, third Monday in February; Memorial Day, last Monday in May; Independence Day, July 4; Labor Day, first Monday in September; Columbus Day, second Monday in October; Veterans Day, November 11; Thanksgiving Day, fourth Thursday in November; and Christmas Day, December 25. The national holidays are observed by employees of the Federal Government and the District of Columbia, and may not be observed by all the States in every case.

(160) In addition, the following holidays are also observed in the area covered by this Coast Pilot: Seward's Day, last Monday in March, and Alaska Day, October 18.